

WHAT IS CLAIMED IS:

1. A device for injecting a drug into a patient comprising:

an activation head (3) open at one end thereof and closed by a pierceable membrane (33) at another end thereof;

5 a needle-shield (1) closed at one end (11) thereof and open at a base (13) thereof, said base (13) fitting and sliding in a rail (31) of said activation head (3);

a rigid vial (5) having a reservoir containing the drug and having a sliding plunger (4) hermetically sealing said vial, said plunger adapted for attachment to said another end of said activation head (3) for making direct contact between a pierceable membrane of said plunger (52) and said pierceable membrane of said activation head (33);

10 a needle (2) having a double-pointed cannula (24) secured to a hub (21) disposed inside said rail of said activation head (3);

15 an activation indicator (45) on said rail of said activation head (3) for indicating an initial resting position of said hub (21) of said cannula (24) in said activation head (3) in which said pierceable membrane (33) is intact; and

20 a needle-shield (1) slidable inside said activation head (3) from said initial resting position to a final activation position for acting on said hub (21) and sequentially piercing said pierceable membranes (33 and 52) with said inner point (26) of said needle (2) and connecting said cannula (24) to said reservoir of said vial (5).

25 2. A device according to claim 1, said activation head (3) being at least semitransparent and said activation indicator (45) being a window (45) in which said rail of said activation head is thinner so as to offer a better view of said needle hub (21) inside said rail.

3. A device according to claim 1, said rail of said activation head (3) containing two retainers (40 and 41) for stopping said needle hub (21) before activation and for locking said needle hub (21) in position after activation.

5 4. A device according to claim 3, said needle-shield (1) having a thicker ring (12) acting as a stop against a top of said activation head (3) during activation.

5. A device according to claim 3, said rail (31) of said activation head (3) having an inner narrower diameter defining a stop (37) for allowing said cannula (24) to pass while stopping said hub (21).

6. A device according to claim 1, said needle hub (21) being colored .

7. A device according to claim 1, said activation head (3) having a flange (36) to grip the device during operation thereof.

8. A device according to claim 1 further comprising at least one level gauge (44) on said activation head (3) making the device usable for administration of both full doses and fractions of doses of the drugs.

9. A device according to claim 1, said activation head (3) being stiffened at said base by at least one radial flap (35).

10. A device according to claim 1, said vial (5) sealed by the plunger (4) being separated from said injection unit and stopped by a cap (8) which must be removed from said vial before assembling said plunger (4) to said another end (38) of said activation head (3).

11. A device according to 1, said vial (5) being transparent, said needle hub (21) and said activation head (3) being plastic and said needle shield (1) being of rigid transparent plastic.

5 12. A device according to claim 1, said base of said activation head (3) and said plunger (4) having complementary threading (38 and 51).

10 13. A device according to claim 1, said base (38a) of said activation head (3) and said plunger (51a) being free to slide into each other without locking, whereby, upon an attempt to draw liquid from outside, said cannula inner point (26) is pulled out of said plunger membrane (52) so that said vial (5) cannot be refilled.

15 14. A device according to claim 13, said base (38a) of said activation head (3) having one or more grooves (38c) permitting air to flow more smoothly into said vial (5) through an orifice (52a) made in said membrane (52) by said inner point (26) of said needle (2) during activation to draw new liquid into said vial.

15. A device according to claim 1, said plunger (4) being made of rubber.

20 16. A device according to claim 1, said activation head (3) having a smooth internal surface facilitating sliding of said needle hub (21) by pressing upon said needle-shield (1).

25 17. A device according to claim 1, said rail of said activation head (3) and said needle hub (21) having complementary threading and said base (13) of said needle-shield (1) and said hub (21) having at least one set of complementary notches whereby rotation of said needle-shield (1) screws said hub (21) into said rail of said activation head (3).

18. A device for injecting a drug into a patient comprising:

an activation head (3) closed at one end by a pierceable membrane (33);

a needle-shield (1) open at a base (13) thereof, said base (13) fitting and sliding in a rail (31) of said activation head (3);

5 a rigid vial (5) having a sliding plunger (4) sealing said vial, said plunger adapted for attachment to said closed end of said activation head (3) for making direct contact between a pierceable membrane of said plunger (52) and said pierceable membrane of said activation head (33);

10 a needle (2) having a double-pointed cannula (24) secured to a hub (21) disposed inside said rail of said activation head (3); and

a needle-shield (1) slidable inside said activation head (3) from an initial resting position to a final activation position for acting on said hub (21) and sequentially piercing said pierceable membranes (33 and 52) with said inner point (26) of said needle (2) and connecting said cannula (24) to said vial (5).

15 19. A device according to claim 18 further comprising an activation indicator (45) on said rail of said activation head (3) for indicating said initial resting position of said hub (21) of said cannula (24) in said activation head (3) in which said pierceable membrane (33) is intact.